

Appl. No. 10/003,273

Reply to Office Action of Dec. 17, 2003

REMARKS/ARGUMENTS

Reconsideration of this application as amended is requested.

Claims 1-19 are pending in this application. Claims 9-12 and 16-19 are withdrawn. Claims 5, 8, 13, and 15 are amended. Claim 6 is as-filed, 20-23 are added. Claims 1-4, 7 and 14 are canceled.

Basis for the amendment of claim 5 may be found in the specification in paragraphs [0018], [0023] and [0034]-[0037], and Fig. 1.

Basis for the amendment of claim 8 may be found in the specification in paragraphs [0018], [0023] and [0034]-[0037], and Fig. 1.

Basis for the amendment of claim 13 may be found in the specification in paragraphs [0018], [0023] and [0034]-[0037], and Fig. 1.

Basis for the amendment of claim 15 may be found in the specification in paragraphs [0018], [0023] and [0034]-[0037], and Fig. 1.

Basis for claim 20 may be found in the specification in paragraph [0009].

Basis for claim 21 may be found in the specification in paragraph [0009].

Basis for claim 22 may be found in the specification in paragraphs [0025] and [0035].

Basis for claim 23 may be found in claim 14.

Basis for claim 24 may be found in the specification in paragraph [0009].

Claims 9-12 and 16-19 have been withdrawn in response to a restriction requirement discussed by telephone with the Examiner on December 9, 2003 in which Robert Seemann elected without traverse to prosecute the invention of Group 1 which is claims 1-8 and 13-15. Applicant retains the right to present claims 9-12 and 16-19 in a divisional application.

Claims 1-8 and 13-15 are rejected under 35 U.S.C. 102(b) over Jansma , US Patent No. 5,539,277's Fig. 1 low pressure mercury vapor discharge lamp comprising a hermetically sealed envelope (2), the wall of the envelope comprising an elongated glass tubular portion, at least one thermionic electrode (3), mercury vapor, and at least one inert gas in the envelope (col. 3, ln.44-46), and a mixture comprising indium and titanium to the inside surface of the tubular portion exposed to the mercury vapor (col. 3-4), the mixture (15, 16) spaced from the electrode toward the center of the tubular portion.

That Jansma also discloses the lamp having an amalgam target consisting of indium and titanium on the inside surface of the tubular portion (col. 3-4) and that Figure 1 of Jansma also shows the amalgam target (15, 16) spaced from the electrode toward the center of the tubular portion.

That Figure 1 of Jansma also shows aluminum oxide (14) on the inside surface of the tube, and shows a mercury vapor discharge lamp comprising an elongated glass envelope (2), an electrode (3) at one end of the envelope, indium and titanium to the wall of the envelope, spaced from the electrode toward the center of the envelope exposed to the mercury.

The rejection of claims 1-8 and 13-15 is traversed. The invention as described in the amended claims is different from Jansma.

In Jansma, a conductive layer 15 conventionally used in mercury vapor rapid-start fluorescent lamps, preferably of tin oxide but may be formed of indium oxide or other conductive material known to aid rapid starting and energy efficiency extends the length of the tube in a thickness sufficient to provide the preselected parameters of startability and wattage consumption efficiency of the lamp.

In order to delay onset of darkened spots on tubes having a tin oxide conductive layer 15, the electrical resistance of the conductive layer along the length of the tube is varied, adjusted by a non conductive segmented layer 14 of metal oxide particles, for example alumina, between layer 15 and the tube wall, in annular contact with conductive layer 15 and the wall, and extends from each end of the tube about 10% to 25% of the length of the tube toward the center of the tube.

A protective barrier layer 16 formed of any inert metal oxide is applied on the inward facing side of conductive layer 15, coextensive with the conductive layer. In the case of a tin oxide conductive layer 15, alumina is said to provide effective protection as a barrier layer 16. Oxides of titanium, zirconium, hafnium, niobium and tantalum are also said to be useful for forming the barrier layer 16.

A phosphor layer 17 covers the inward facing side of barrier layer 16 and the tube is said to contain a discharge sustaining fill comprising mercury, together with an inert, ionizable gas, typically argon or a mixture of argon and krypton at low pressure of about 10^{-4} torr.

Claims 1-4, 7 and 14 are canceled, and to them the rejection no longer applies.

The invention described in claims 5, 6, 8, 13, 15 and 20-23 is different from Jansma. Amended independent claims 5, 8, 13 and 15 include a metallic bond of indium and titanium fused together. This is a different chemical bond from each of indium oxide, titanium oxide, or the other metal oxides which form the layers that Jansma contains.

The invention described in new claim 22 includes an amalgam of mercury with a metallic bond of indium and titanium. This is different from Jansma's disclosed metals each being bound in an oxide. Although mercury is present in the Jansma tube, the metal oxide layers disclosed are not designed for forming an amalgam, but for one layer of metal oxide to modulate the electrical conductance of an adjacent layer of metal oxide.

Definitions of a metallic bond by Chambers Science and Technology Dictionary. © W&R Chambers Ltd and Cambridge University Press 1988, and by The Columbia Encyclopedia, Sixth Edition, 2001 are provided on the attached Appendix sheet after page 13 of this paper.

In view of the above amendments and explanation it is respectfully requested that the 35 U.S.C. 102(b) rejection of claims 1-8 and 13-15 be withdrawn.

Applicant is advised that should claims 1-3 be found allowable, claims 13-15 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. That when two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. (Further explained in MPEP 706.03(k))

Claims 1-3 are canceled. The independent claims remaining in the application, claims 5, 8, 13 and 15 describing the invention are different in scope from one another.


Mike et al. (US 3,963,954), Fowler et al. (US 5,229,687), Forsdyke et al. (US 5,952,780) which mentions an amalgam containing mercury and one or more of the metals Pb, Sn, Bi, In, Cd, and Ti, (col. 1, lines 26-30), and Silverstein et al. (US 4,467,238) have been reviewed and do not appear to add anything that would further contribute to making the invention as described in the claims as amended, obvious.

In view of the above amendments and arguments, the 35 U.S.C. 102(b) rejection and reason for

objection are overcome. It is respectfully requested that the rejection of claims 1-8 and 13-15 be withdrawn, and that claims 5, 6, 8, 13, 15, and 20-24 be allowed.

No additional fee is seen needed for claims.

Respectfully submitted,

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